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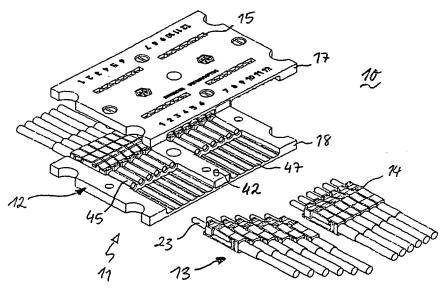
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[Fortsetzung auf der nächsten Seite]

(54) Title: FIBRE-OPTIC PLUG-IN CONNECTOR SYSTEM

(54) Bezeichnung: FASEROPTISCHES STECKVERBINDERSYSTEM



(57) Abstract: The invention relates to a fibre-optic plug-in connector system (10) comprising an adapter (11), in addition to individual optical plug-in connectors (13), in which a respective optical fibre terminates in a ferrule (23) and which can be respectively inserted into the adapter (11) from two opposing sides to produce an optical connection between the ends of two optical fibres. According to the invention, the adapter (11) has a plurality of parallel guide sheaths (45), which are located next to one another in an adapter housing (12) and into which the optical plug-in connectors (13) comprising their ferrules (23) can be inserted from both sides. To achieve an extremely simple, space-saving construction for a plug-in connector system of this type, the adapter housing (12) is composed of several separate, interconnectable parts (17, 18), between which the guide sheaths (45) are held with a degree of play.

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NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK (Gebrauchsmuster), SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Bestimmungsstaaten (regional): ARIPO-Patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), eurasisches Patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), europäisches Patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR), OAPI-Patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

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mit internationalem Recherchenbericht

Zur Erklärung der Zweibuchstaben-Codes und der anderen Abkürzungen wird auf die Erklärungen ("Guidance Noies on Codes and Abbreviations") am Anfang jeder regulären Ausgabe der PCT-Gazette verwiesen.

⁽⁵⁷⁾ Zusammenfassung: Ein faseroptisches Steckverbindersystem (10) umfasst einen Adapter (11) sowie einzelne optische Steckverbinder (13), im welchen jeweils eine optische Faser in einer Ferrule (23) endet, und welche zur Herstellung einer optischen Verbindung zwischen den Enden zweier optischer Fasern jeweils von zwei gegenüberliegenden Seiten in den Adapter (11) einsteckbar sind, wobei der Adapter (11) in einem Adaptergehäuse (12) eine Mehrzahl von parallel nebeneinander angeordneten Führungshülsen (45) aufweist, in welche die optischen Steckverbinder (13) mit ihren Ferrulen (23) von beiden Seiten einsteckbar sind. Bei einem solchen Steckverbindersystem wird ein extrem einfacher und platzsparender Aufbau dadurch erreicht, dass das Adaptergehäuse (12) aus mehreren separaten, miteinander verbindbaren Teilen (17, 18) zusammengesetzt ist, zwischen denen die Führungshülsen (45) mit Spiel gehalten werden.

INTERNATIONAL! \RCH REPORT

PCT/CH 03/00011

A. CLASS IPC 7	G02B6/38		
	to International Patent Classification (IPC) or to both national classifications (IPC) or to both national classification (IPC) or to both national classificati	lication and IPC	
Minimum de	documentation searched (classification system followed by classifica-	ation symbols)	
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Electronic o	data base consulted during the International search (name of data b	pase and, where practical, search terms used)
EPO-In	nternal		
C. DOCUMI	Citation of document with indication, where appropriate of the re	· · · · · · · · · · · · · · · · · · ·	(-)- Al-
Udiegory	Citation of document, with indication, where appropriate, of the re	elevani passages	Relevant to daim No.
Α .	EP 0 430 107 A (NIPPON TELEGRAPH	1 &	1
	TELEPHONE) 5 June 1991 (1991-06- cited in the application	·05)	
•	abstract; figures 1-43		
Α	EP 1 168 020 A (BERG ELECTRONICS	MFG)	1
	2 January 2002 (2002-01-02)	111 47	•
	cited in the application abstract; figure 15		
Α	US 5 214 730 A (ASHIYA FUMIHIRO 25 May 1993 (1993-05-25)	ET AL)	1
	cited in the application		
	abstract; figures 1-30		
		-/	
	ı		
1	i		
	ner documents are listed in the continuation of box C.	X Palent lamily members are listed in	ı annex.
	legories of cited documents :	*T* later document published after the interr or priority date and not in conflict with the	national filing date
conside	ent defining the general state of the last which is not ered to be of particular relevance	cited to understand the principle or theo invention	ory underlying the
riling da	document but published on or after the international ate nt which may throw doubts on priority claim(s) or	'X' document of particular relevance; the cla cannot be considered novel or cannot be	oe considered to
which is citation	is cited to establish the publication date of another to other the control of the	"Y" document of particular relevance; the cla cannot be considered to involve an inve	almed Invention
O documen	ent referring to an oral disclosure, use, exhibition or neans	document is combined with one or more ments, such combination being obvious	e other such docu-
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Date of the a	actual completion of the International search	Date of mailing of the International search	ch report
	5 February 2003	03/03/2003	
Name and ma	hailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2	Authorized officer	
	NL – 2280 HV Rijswijk Tel. (+31–70) 340–2040, Tx. 31 651 epo nl.	M-32- 1/	
	Fax: (+31-70) 340-3016	Malic, K	

INTERNATIONAL STARCH REPORT

Intern: Application No
PCT/CH 03/00011

Category Cuation of	UMENTS CONSIDERED TO BE RELEVANT document, with indication, where appropriate, of the relevant passages	· · · · · · · · · · · · · · · · · · ·	Relevant to claim No.
A US (document, with Indication, where appropriate, of the relevant passages		Relevant to claim No.
A US			
cite	3 352 372 B1 (SHAHID MUHAMMED AFZAL) arch 2002 (2002-03-05) ed in the application aract; figures 1-13		1
; SCF 16 / cite	O1 59499 A (HUBER & SUHNER AG HMALZIGAUG THOMAS (CH); KOCH BEAT (CH)) Rugust 2001 (2001-08-16) Ed in the application Fract; figures 1-4		1

INTERNATIONAL SEARCH REPORT

tricana on patent tamily members

Interr Application No
PCT/CH 03/00011

Patent document cited in search report		Publication date		Patent family member(s)		Publication date
EP 0430107	A	05-06-1991	JP	250485	2 B2	05-06-1996
2. 0.0020.			ĴΡ	325261		11-11-1991
			JР	251473		10-07-1996
			ĴР	329600!		26-12-1991
			JР	2771869		02-07-1998
			ĴР	316470		16-07-1991
			ĴР	2771870		02-07-1998
			ĴΡ	317280		26-07-1991
		•	ĂU	62304		30-04-1992
			AU	6698790		25-07-1991
			CA	2030897		25-05-1991
			DE	69026472		15-05-1996
			DE	6902647		17-10-1996
			DE	69033276		07-10-1990
			DE	69033276		30-12-1999
			DE	69033277		07-10-1999
	•		DE	69033277		30-12-1999
			DE	69033738		28-06-2001 06-09-2001
			DE	69033738		
			DE	69033767		30-08-2001
			DE	69033767		18-04-2002
			EP	0430107		05-06-1991
•			EP	0663601		19-07-1995
			EP	0660144		28-06-1995
			EΡ	0660149		28-06-1995
			EP	0663602		19-07-1995
			KR	9400836		02-02-1994
			US	5404416		04-04-1995
•			US	5528711		18-06-1996
•			US	5537501		16-07-1996
			US	5121454		09-06-1992
			US	5673346		30-09-1997
			JP	2106042		06-11-1996
			JP	4151113		25-05-1992
			JP	8012309) B	07-02-1996
			ΑU	643116		04-11-1993
			AU	1065892	2 A	26-03-1992
			AU	4606393	3 A	18-11-1993
			ΑU	4606493	3 A	18-11-1993
			AU	4606593		18-11-1993
EP 1168020	A	02-01-2002	US	6412986	B1	02-07-2002
			EP	1168020) A2	02-01-2002
			JP	2002048946	5 A	15-02-2002
US 5214730	A	25-05-1993	JP	2750961	B2	18-05-1998
			JP	4336509		24-11-1992
			JΡ	2750963		18-05-1998
			ĴΡ	4347806		03-12-1992
			JР	2769752		25-06-1998
			ĴΡ	5034544		12-02-1993
			JΡ	2750966		18-05-1998
			JP	5034550		12-02-1993
			AU	635172		11-03-1993
			AU	1611392		26-11-1992
			CA	2068453		14-11-1992
			UH	2000433) W.T	14-11-1226
				60217716	י ח	10-04-1007
			DE DE	69217716 69217716		10-04-1997 31-07-1997

INTERNATIONAL SEARCH REPORT

imain

on patent family members

Interr Application No
PCT/UH 03/00011

Patent document cited in search report		Publication date		Patent family member(s)	Publication date
US 5214730	A		DE DE EP ES ES KR	69232421 D1 69232421 T2 0514722 A1 0712015 A2 2100973 T3 2172607 T3 9613800 B1	21-03-2002 19-09-2002 25-11-1992 15-05-1996 01-07-1997 01-10-2002 10-10-1996
US 6352372	B1	05-03-2002	EP JP	1092994 A2 2001147348 A	18-04-2001 29-05-2001
WO 0159499	Α	16-08-2001	WO AU EP	0159499 A1 2426900 A 1254387 A1	16-08-2001 20-08-2001 06-11-2002